ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

ENAC/EDCE 2010

TOWARDS A MODEL FOR VIEW DIRECTION PATTERNS AS A FUNCTION OF LIGHT DISTRIBUTION

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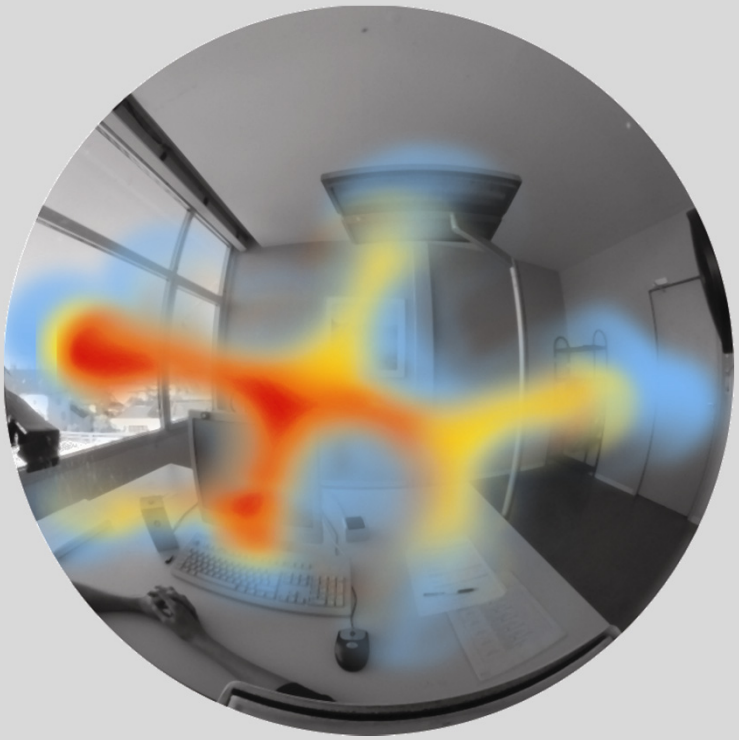
DAYLIGHT is a desirable architectural component that satisfies both visual and psychological needs of the occupants. Therefore it is essential to integrate this component in the design in a way that maximum daylight is guaranteed and a visually healthy and comfortable space is created. There are certain lighting situations that can reduce visibility and create dissatisfaction and visual discomfort in a daylit environment. Among different aspects of visual discomfort, discomfort glare is a phenomenon, which is less understood and is harder to quantify.



BACKGROUND

The studies concerning discomfort glare are mainly subjective based on measurements with conventional psychophysical procedures. These studies have resulted in a series of glare indices to predict the degree of discomfort caused by different light settings.

PROBLEM

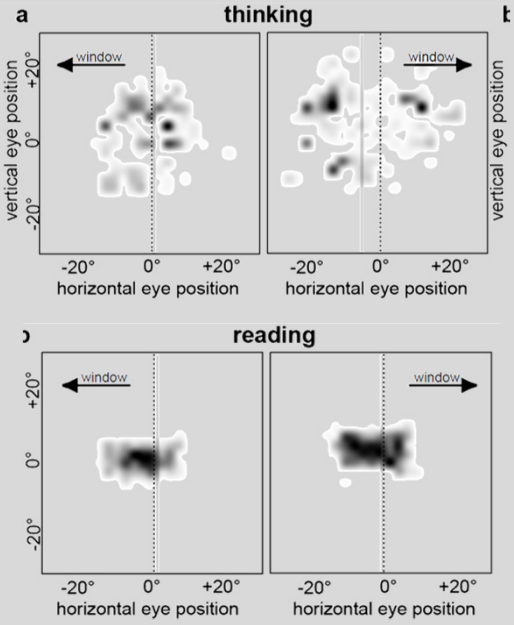
The main assumption in the glare indices and defining position index is that the line of sight is fixed and focused on a specific point. In a natural experience of a space, line of view is not fixed and varies through time and space. Moving eyes and/or head scans the scene, which means the view direction is changing accordingly. The hypothesis is that there might be clear relations between the eye movement patterns and visual discomfort glare sensation.

OBJECTIVES AND METHODOLOGY

The objective of this study is to refine our understanding of dependencies of view direction as a function of light distribution.

The eye-tracking method is embedded in undesstanding glare. The experiment set up consists of a fixed office room layout and four daylight situations created by changing the façade configuration and an artificial light situation. Subjects are asked to perform a series of cognitive and non-cognitive tasks including **reading**, **memorizing**, **reproducing**, **resting** and **detection**. Subjective glare assessments are also gathered.

Daylit situation: Varying light conditions are created by setting four different facade configurations.



The eye-tracking method allows us to experimentally investigate the potential correlation of eye movement patterns to glare perception in a realistic scene. Very few studies so far have investigated the relationship between eye movements and building-induced visual context, such as a window (Hubalek & Schierz, 2005; Surry et al., 2008). None went as far as connecting findings on eye movements to comfort perception.

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